

CLAIMS:

1. A method of sorting currency bills, each having an associated denomination, using a currency bill evaluating device adapted to dynamically assign denominations to output receptacles, the currency evaluating device comprising an input receptacle, a plurality of output receptacles, and a transport mechanism positioned to individually transport bills from the input receptacle to the output receptacles, the method comprising:

- (A) transporting a bill from the input receptacle past a bill denominating sensor;
- (B) determining the denomination of the transported bill;
- (C) determining whether the denomination of the bill has been assigned to a non-full output receptacle and
 - (i) if so, transporting the bill to the assigned non-full output receptacle;
 - (ii) if not, determining whether there is an open output receptacle and
 - (a) if so, assigning the denomination of the bill to an open output receptacle and transporting the bill to the assigned output receptacle;
 - (b) if not, stopping the operation of the device;
- (D) determining whether an output receptacle to which a bill has been transported has reached an output receptacle limit and, if so, designating the output receptacle as being full;
- (E) determining whether there are any more bills to be processed and if so repeating steps (A)-(E).

2. The method of claim 1 further comprising:

- providing an indication to an operator that an output receptacle is full when an output receptacle is designated as being full; and
- designating an output receptacle as being open after an operator has removed all bills from the output receptacle.

3. The method of claim 1 further comprising:

- providing an indication to an operator that an output receptacle is full when an output receptacle is designated as being full.

4. The method of claim 1 further comprising:
designating an output receptacle as being open after all bills have been removed therefrom.
5. The method of claim 1 further comprising:
designating an output receptacle as being open when no bills are contained therein.
6. A method of operating a multi-output receptacle currency evaluating device in a manner employing both one or more fixed output receptacles and one or more dynamic output receptacles wherein the currency evaluation device comprises an input receptacle adapted to receive currency bills, the currency bills each having an associated denomination, a plurality of output receptacles, each of the one or more fixed output receptacles having a denomination assigned thereto and each of the dynamic output receptacles being capable of being dynamically assigned to a denomination, the method comprising:
 - (A) determining the denomination of a bill;
 - (B) determining if the denomination of the bill has been assigned to one or more of the fixed output receptacles, and if so, determining whether one or more of the assigned fixed output receptacles is not full, and, if so, transporting the bill to one of the assigned non-full fixed output receptacles;
 - (C) determining if the denomination of the bill has been assigned to a non-full dynamic output receptacle, and
 - (i) if so, transporting the bill to the assigned, non-full output receptacle,
 - (ii) otherwise, dynamically assigning the denomination of the bill to an open dynamic output receptacle and transporting the bill to the assigned output receptacle.
7. A method of operating a multi-output receptacle currency evaluating device in a manner employing both one or more fixed output receptacles and one or more dynamic output receptacles wherein the currency evaluation device comprises an input receptacle adapted to receive currency bills, the currency bills each having an associated denomination, a plurality of output receptacles, each of the one or more fixed output

receptacles having one or more denominations assigned thereto and each of the dynamic output receptacles being capable of being dynamically assigned to a denomination, the method comprising:

- (A) determining the denomination of a bill,
- (B) determining if the denomination of the bill has been assigned to one or more of the fixed output receptacles, and if so, determining whether one or more of the assigned fixed output receptacles is not full, and, if so, transporting the bill to one of the assigned non-full fixed output receptacles,
- (C) determining if the denomination of the bill has been assigned to a non-full dynamic output receptacle, and
 - (i) if so, transporting the bill to the assigned, non-full output receptacle,
 - (ii) otherwise, dynamically assigning the denomination of the bill to an open dynamic output receptacle and transporting the bill to the assigned output receptacle.

8. The method of claim 7 further comprising suspending the operation of the device if in step (C)(ii) an open dynamic output receptacle is not available.

9. The method of claim 7 wherein the currency evaluating device is operated in a manner employing two or more dynamic output receptacles.

10. The method of claim 7 wherein the currency evaluating device is operated in a manner employing three or more dynamic output receptacles.

11. The method of claim 7 further comprising suspending the operation of the device when the denomination of the bill has been assigned to one or more of the fixed output receptacles but none of the one or more assigned fixed output receptacles are not full.

12. The method of claim 7 further comprising proceeding to step (C) when the denomination of the bill has been assigned to one or more of the fixed output receptacles but none of the one or more assigned fixed output receptacles are not full, thereby

permitting the denomination of the bill to be assigned to one of the dynamic output receptacles when all associated fixed output receptacles are full.

13. The method of claim 12 further comprising suspending the operation of the device if in step (C)(ii) an open dynamic output receptacle is not available.

14. The method of claim 7 further comprising repeating steps (A) – (C) for subsequent bills in the input receptacle until there are no more bills to be processed.

15. A method of assigning denominations to output receptacles of a currency denominating device comprising a plurality of output receptacles, the method comprising setting each one of the output receptacles to be either a dynamic pocket, subject to dynamic assignment of a bill denomination during normal operation of the denominating device, or a fixed pocket, the setting of an output receptacle to be fixed pocket comprising assigning a particular denomination to the output receptacle such that during normal operation only bills of the particular denomination may be transported to the fixed output receptacle.

16. A currency bill evaluating device adapted to dynamically assign denominations to output receptacles, the currency evaluating device comprising:

- an input receptacle,
- a plurality of output receptacles,
- a transport mechanism adapted to individually transport bills from the input receptacle to the output receptacles and
- a processor adapted to control of the operation of the device, the processor being programmed to:

- (A) cause a bill to be transported from the input receptacle past a bill denominating sensor;
- (B) determine the denomination of the transported bill;
- (C) determine whether the denomination of the bill has been assigned to a non-full output receptacle and
 - (i) if so, transport the bill to the assigned non-full output receptacle;

- (ii) if not, determine whether there is an open output receptacle and
 - (a) if so, assign the denomination of the bill to an open output receptacle and cause the bill to be transported to the assigned output receptacle;
 - (b) if not, stop the operation of the device;
- (D) determine whether an output receptacle to which a bill has been transported has reached an output receptacle limit and, if so, designate the output receptacle as being full;
- (E) determine whether there are any more bills to be processed and if so repeating steps (A)-(E).

17. The device of claim 16 wherein the processor is further programmed to:

provide an indication to an operator that an output receptacle is full when an output receptacle is designated as being full;

designate an output receptacle as being open after an operator has removed all bills from the output receptacle.

18. The device of claim 16 wherein the processor is further programmed to provide an indication to an operator that an output receptacle is full when an output receptacle is designated as being full.

19. The device of claim 16 wherein the device is adapted to permit an operator to remove bills from the output receptacles and wherein the processor is further programmed to:

designate an output receptacle as being open after an operator has removed all bills from the output receptacle, thereby making the output receptacle available to have a denomination re-assigned thereto.

20. The device of claim 16 wherein the device is adapted to permit bills to be removed from the output receptacles and wherein the processor is further programmed to:

designate an output receptacle as being open when no bills are contained therein thereby making the output receptacle available to have a denomination dynamically assigned thereto.

21. A currency denominating device comprising:

- (a) a plurality of output receptacles; and
- (b) an operator interface adapted to permit the operator of the device to change the designation of each one of the output receptacles between being a fixed pocket and being a dynamic pocket.

22. A currency denominating device comprising:

- (a) a plurality of output receptacles; and
- (b) an operator interface adapted to permit the operator of the device to change the designation of each of the output receptacles between being a fixed pocket and being a dynamic pocket, wherein a fixed pocket is a pocket assigned to a particular denomination such that during normal operation only bills of the particular denomination may be transported to the fixed output receptacle and wherein a dynamic pocket is a subject to dynamic assignment of a bill denomination during normal operation of the denominating device.

23. A method of sorting currency bills, each having an associated denomination, using a currency bill evaluating device comprising an input receptacle, a plurality of output receptacles, and a transport mechanism positioned to transport bills from the input receptacle to the output receptacles, the method comprising:

- (A) transporting bills from the input receptacle past a bill denominating sensor;
- (B) determining the denomination of a first transported bill;
- (C) associating a first denomination with a first one of the output receptacles wherein the first denomination is the denomination of the first transported bill and delivering the first transported bill to the first one of the output receptacles;
- (D) determining the denomination of subsequent transported bills;
- (E) upon first encountering a transported bill having a denomination other than the first denomination, defining a second denomination as the denomination of the transported bill having a denomination other than the first denomination and associating the second denomination with a second one of the output receptacles;
- (F) delivering bills having the first denomination to the first output receptacle;
- (G) delivering bills having the second denomination to the second output receptacle;

- (H) monitoring whether the first output receptacle has been cleared of bills;
- (I) monitoring whether the second output receptacle has been cleared of bills;
- (J) upon encountering a transported bill having a denomination other than the first or second denominations, determining whether either the first or second output receptacle has been cleared of bills and if so,
 - (i) redefining the first denomination to be the denomination of the bill having a denomination other than the first or second denominations if the first output receptacle has been cleared and delivering the bill to the first output receptacle;
 - (ii) redefining the second denomination to be the denomination of the bill having a denomination other than the first or second denominations if the second output receptacle has been cleared and delivering the bill to the second output receptacle;
- (K) repeating steps (F) – (J).

24. The method of claim 23 further comprising suspending the operation the device if in step (J) neither the first nor the second output receptacles has been cleared of bills upon encountering a transported bill having a denomination other than the first or second denominations.

25. A method of sorting currency bills, each having an associated denomination, using a currency bill evaluating device comprising an input receptacle, a plurality of output receptacles, and a transport mechanism positioned to transport bills from the input receptacle to the output receptacles, the method comprising:

- (A) transporting bills from the input receptacle past a bill denominating sensor;
- (B) determining the denomination of the bills;
- (C) determining the first denomination of the bills encountered;
- (D) determining the second denomination of the bills encountered;
- (E) associating the first denomination with a first one of the output receptacles;
- (F) associating the second denomination with a second one of the output receptacles;
- (G) delivering bills having the first denomination to the first output receptacle;
- (H) delivering bills having the second denomination to the second output receptacle;

- (I) monitoring whether the first output receptacle has been cleared of bills,
- (J) monitoring whether the second output receptacle has been cleared of bills,
- (K) upon encountering a bill having a denomination other than the first or second denominations, determining whether either the first or second output receptacle has been cleared of bills and if so,
 - (i) redefining the first denomination to be the denomination of the bill having a denomination other than the first or second denominations if the first output receptacle has been cleared;
 - (ii) redefining the second denomination to be the denomination of the bill having a denomination other than the first or second denominations if the second output receptacle has been cleared;
- (L) repeating steps (E) – (K).

26. A method of sorting currency bills, each having an associated denomination, using a currency bill evaluating device comprising an input receptacle, a plurality of output receptacles, and a transport mechanism positioned to transport bills from the input receptacle to the output receptacles, the method comprising:

- (A) transporting bills from the input receptacle past a bill denominating sensor;
- (B) determining the denomination of the bills;
- (C) determining the first denomination of the bills encountered;
- (D) determining the second denomination of the bills encountered;
- (E) associating the first denomination with a first one of the output receptacles;
- (F) associating the second denomination with a second one of the output receptacles;
- (G) delivering bills having the first denomination to the first output receptacle;
- (H) delivering bills having the second denomination to the second output receptacle.

27. A currency bill evaluating device comprising:

- an input receptacle,
- a plurality of output receptacles,
- a transport mechanism adapted to individually transport bills from the input receptacle to the output receptacles and

a processor adapted to control of the operation of the device, the processor being programmed to:

- (A) cause bills to be transported from the input receptacle past a bill denominating sensor;
- (B) determine the denomination of a first transported bill;
- (C) associate a first denomination with a first one of the output receptacles wherein the first denomination is the denomination of the first transported bill and cause the first transported bill to be delivered to the first one of the output receptacles;
- (D) determine the denomination of subsequent transported bills;
- (E) upon first encountering a transported bill having a denomination other than the first denomination, define a second denomination as the denomination of the transported bill having a denomination other than the first denomination and associate the second denomination with a second one of the output receptacles;
- (F) cause bills having the first denomination to be delivered to the first output receptacle;
- (G) cause bills having the second denomination to be delivered to the second output receptacle;
- (H) monitor whether the first output receptacle has been cleared of bills;
- (I) monitor whether the second output receptacle has been cleared of bills;
- (J) upon encountering a transported bill having a denomination other than the first or second denominations, determine whether either the first or second output receptacle has been cleared of bills and if so,
 - (i) redefine the first denomination to be the denomination of the bill having a denomination other than the first or second denominations if the first output receptacle has been cleared and cause the bill to be delivered to the first output receptacle;
 - (ii) redefine the second denomination to be the denomination of the bill having a denomination other than the first or second denominations if the second output receptacle has been cleared and cause the bill to be delivered to the second output receptacle;
- (K) repeating steps (F) – (J).

28. The device of claim 27 wherein the processor is further programmed to suspend the operation the device if in step (J) neither the first nor the second output receptacles has been cleared of bills upon encountering a transported bill having a denomination other than the first or second denominations.

29. A currency bill evaluating device comprising:

an input receptacle,

a plurality of output receptacles,

a transport mechanism adapted to individually transport bills from the input receptacle to the output receptacles and

a processor adapted to control of the operation of the device, the processor being programmed to:

(A) cause bills to be transported from the input receptacle past a bill denominating sensor;

(B) determine the denomination of the bills;

(C) determine the first denomination of the bills encountered;

(D) determine the second denomination of the bills encountered;

(E) associate the first denomination with a first one of the output receptacles;

(F) associate the second denomination with a second one of the output receptacles;

(G) cause bills having the first denomination to be delivered to the first output receptacle;

(H) cause bills having the second denomination to be delivered to the second output receptacle;

(I) monitor whether the first output receptacle has been cleared of bills;

(J) monitor whether the second output receptacle has been cleared of bills;

(K) upon encountering a bill having a denomination other than the first or second denominations, determine whether either the first or second output receptacle has been cleared of bills and if so,

(i) redefine the first denomination to be the denomination of the bill having a denomination other than the first or second denominations if the first output receptacle has been cleared;

- (ii) redefine the second denomination to be the denomination of the bill having a denomination other than the first or second denominations if the second output receptacle has been cleared;
- (L) repeating steps (E) – (K).

30. A currency bill evaluating device comprising:

- an input receptacle,
- a plurality of output receptacles,
- a transport mechanism adapted to individually transport bills from the input receptacle to the output receptacles and
- a processor adapted to control of the operation of the device, the processor being programmed to:
 - (A) cause bills to be transported from the input receptacle past a bill denominating sensor;
 - (B) determine the denomination of the bills;
 - (C) determine the first denomination of the bills encountered;
 - (D) determine the second denomination of the bills encountered;
 - (E) associate the first denomination with a first one of the output receptacles;
 - (F) associate the second denomination with a second one of the output receptacles;
 - (G) cause bills having the first denomination to be delivered to the first output receptacle; and
 - (H) cause bills having the second denomination to be delivered to the second output receptacle.

31. A method of evaluating a stack of currency bills using a currency evaluation device comprising:

- receiving a stack of bills in an input receptacle of the evaluation device,
- transporting the bills, one at a time, from the input receptacle to one of two or more output receptacles of the currency evaluation device, the two output receptacles having at least a first output receptacle and a second output receptacle;

counting and determining the denomination of the bills including bills of a plurality of denominations utilizing a detector positioned along a transport path between the input receptacle and the output receptacles;

monitoring whether any bills are present in the first and second output receptacles;

routing bills having a first target denomination to the first output receptacle;

generating a denomination change error upon first encountering a bill not having the first target denomination;

designating a second target denomination to be the denomination of the bill causing generating the first denomination change error upon the first occurrence of a denomination change error,

routing bills having a second target denomination to the second output receptacle;

upon encountering a bill having neither the first target denomination nor the second target denomination, then generating a denomination change error and

- a) stopping the operation of the device if both the first and the second output receptacles have one or more bills therein; or
- b) routing the bill having neither the first target denomination nor the second target denomination to an empty one of the first and second output receptacles if one of the output receptacles is empty and resetting the first target denomination to be the denomination of the bill if the bill is routed to the first output receptacle and resetting the second target denomination to be the denomination of the bill if the bill is routed to the second output receptacle.

32. The method of claim 31 wherein the counting and determining the denomination of the bills comprises counting and determining United States currency bills of a plurality of denominations.

33. The method of claim 31 wherein the counting and determining of the currency bills is performed independent of the size of the bills.

34. The method of claim 31 wherein the determining of the denomination of bills includes denominating currency bills of a plurality of denominations, genuine bills of the

plurality of denominations having a plurality of images associated therewith, the plurality of images defining the plurality of denominations, and further including scanning the image associated with each of the bills and distinguishing among the plurality of denominations using the scanned image.

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